

technique can avoid the aforementioned limitations. In our concept of design, as bacteria grow and attach to particles, the measured Brownian motion tends to vary in response to the increased equivalent particle diameter. When bacteria are sensitive to an antibiotic, the change will then be halted, which can be associated with the minimum inhibitory concentration (MIC) of the drug. In an attempt with *P. aeruginosa*, we demonstrated that an AST process can be complete within 2 h. In addition, the minimum requirement of the sample volume is only 0.5  $\mu$ L while the initial bacteria count is as low as 50 CFU per droplet ( $10^5$  CFU/mL).

**Results:** An assessment of binding specificity showed that  $92 \pm 2.2\%$  of the anti-*P. aeruginosa* polyclonal antibody modified particles remained attached firmly to *P. aeruginosa* after 1 h. The bacterium-particle complex was verified using a SEM. The rough surfaces of the antibody-conjugated particles were attributed to the matrix formed by the antibodies. The SEM images provided visual evidence showing the successful binding between the bacteria and the particles. The incubation time and binding efficacy here were consistent with those in previous studies based on the bead-based immunoassay.

**Conclusion:** In summary, our findings suggest that the diffusivity of particles proportionally declines with the enlarged equivalent particle diameter because of the binding bacteria. The diffusivity of bacterium-particle complexes can be a sensitive indicator of the quantity of particular microorganisms. By analyzing the temporal diffusivity change of particles attached to bacteria, an AST assessment of the response of *P. aeruginosa* to gentamicin can be rapidly determined within 2 h. Our study presents a novel technique features a low sample volume ( $\sim 0.5$   $\mu$ L), a low initial bacteria count (50 CFU per droplet  $\sim 10^5$  CFU/mL), high sensitivity (one bacterium on single particles), simple fabrication, and rapid AST (within 2 h). Taking advantage of the bead-based immunoassays, multiple types of bacteria can be measured simultaneously by suspending corresponding antibody-modified particles in the medium. In addition, AST evaluations for other bacterial strains can be conducted similarly. The proposed technique will provide insight into achieving rapid and sensitive AST in the near future.

## MP2-6.

### CLINICAL EXPERIENCE FOR THE TREATMENT OF URINARY TUBERCULOSIS – REAPPRAISAL

Tsu-Feng Lin<sup>1</sup>, Wei-Kung Tsai<sup>1</sup>, Marcelo Chen<sup>1</sup>, Wun-Rong Lin<sup>1</sup>, Huang-Kuang Chang<sup>1</sup>, Wen-Chou Lin<sup>1</sup>, Allen W. Chiu<sup>1,2</sup>. <sup>1</sup>Department of Urology, Mackay Memorial Hospital, Mackay Medical College, Taiwan; <sup>2</sup>School of median, National Yang-Ming University, Taiwan

**Purpose:** Urinary tuberculosis is one of extrapulmonary tuberculosis (TB). Globally, in 2014, there were about 880 thousand patients diagnosed with extrapulmonary TB. Urinary TB, called great imitator, had variant symptom. It is hard to diagnose properly or timely. Delay-treatment relates to renal function loss and structure destroyed. We report urinary tuberculosis clinical manifestation, diagnosis, and the relationship between treatment duration and outcomes.

**Materials and Methods:** Chart for all patients with urinary tuberculosis from 1978 to 2014 were reviewed, patient's symptom, diagnosed method, image study, duration of diagnosis, treatment, and follow up condition were analyzed.

**Results:** Twenty-one patients were reviewed, and 18 were upper urinary tract TB. Median age was 49 year old, 2 patients had pulmonary TB history, and 1 patient had history of BCG bladder instillation. 9 patients had concomitant infection including lung. Urinary tract symptom happened in 16 (76%) patients, 18 (95%) patient had hydronephrosis and hydroureter. 6 (33%) patients had renal calcification. No bilateral kidney involvement was noted. 3 patients had Gr. III obstruction and were improved to Gr. II or Gr. I after D-J insertion. 2 patients received nephrectomy, and 2 patients had persisted Gr. IV obstruction. Symptom-to-treatment and pre-treatment hydronephrosis grading had linear relationship (Pearson's  $r = 0.667$ ,  $p = 0.03 < 0.05$ ). Symptom-to-treatment and post-treatment hydronephrosis showed linear relationship of Pearson's  $r = 0.710$ ,  $p = 0.007$ ). There was no significant relationship between duration of diagnosis and

post-treatment eGFR change ( $p > 0.05$ ). Median duration from symptom to diagnosis was 46.7 days.

**Conclusion:** Urinary tuberculosis has vague clinical manifestation, and easy to delay diagnosis. There was no bilateral Tb urinary tract involvement. No patient received hemodialysis after TB treatment, but 5 patients had non-function kidney over infected side. Therefore, early TB treatment improved hydronephrosis severity and protect renal loss.

## MP2-7.

### HEMATOGENOUS EPIDIDYMITIS WITH COMPRESSIVE TESTICULAR HYPOPERFUSION DUE TO INTRAVENOUS DRUG ABUSE: A CASE REPORT

Chia-Hao Hsu, Te-Fu Tsai, Thomas I-Sheng Hwang. Division of Urology, Department of Surgery, Shin Kong WHS Memorial Hospital, Taiwan

Epididymitis generally comes from sexual transmission or urinary tract ascending infection. We present a case of a 39-year-old man admitted with right scrotal swelling. Scrotal ultrasonography revealed markedly increased right epididymal blood flow with compressive right testicular hypoperfusion. Right scrotal incision and debridement was performed. The patient's clinical state did not improve after antibiotic treatment and wound care. Then he discharged against our medical advice. Two weeks later, he went to our emergent department with high fever and odor wound discharge. Computed tomography of abdomen and pelvis showed multifocal abscess within left psoas muscle. Aggressive intravenous fluid supplement with empirical antibiotic treatment was used. Scrotal wound exploration found enlarged epididymis with nonviable right testis and then orchiectomy was performed. Blood culture and CT-guided aspirate (left psoas muscle abscess) culture all revealed methicillin-resistant staphylococcus aureus (MRSA) and we shifted the antibiotic to teicoplanin. His clinical state significantly improved and was discharged from the hospital. Additional history revealed that he had been addicting heroin for a number of years. This case illustrates the potential for severe epididymitis with intravenous drug abuse and the value of a complete history. According to on-line literature search, the patient may be the first reported case of MRSA-induced epididymitis from hematogenous spreading due to intravenous drug abuse. The pathogen was not the main target of empiric antibiotic treatment. The infection progressed and resulted in testicular loss and psoas muscle abscess. Clinicians should be aware that clinical state not improved after empiric treatment need further investigation.

## Pediatrics

## MP2-8.

### URETHROSCOPIC GREENLIGHT LASER EPILETION OF URETHRAL HAIR FOLLICLES AFTER HYPOSPADIAS REPAIR

Hueih-Shing Hsu<sup>1,2</sup>, Heng-Chang Chuang<sup>1,2</sup>, Shyh-Chyi Chang<sup>1,2</sup>, Hsu-Hsiang Wang<sup>1,2</sup>, I-Hung Shao<sup>1,2</sup>. <sup>1</sup>Division of Urology, Department of Surgery, Lotung Pohai Hospital, Yilan, Taiwan; <sup>2</sup>Urology, National Yang Ming University, Taiwan

**Purpose:** Hair-bearing urethra occur at the rate approximate 5% following hypospadias repair.

The Greenlight laser is well known to Urologist, but no one use this modality in the treatment of urethral hair. We present an interesting case that has urethral hairs 15 years after hypospadias repair. Greenlight laser epilation of urethral hair was used and the outcome of the novel treatment was reported.

**Case report:** This is a 20 year-old boy who suffered from congenital abnormalities including imperforate anus, undescended testicles, severe hypospadias and chromosome abnormality. When he was 3 years old, hypospadias repair was done by two stage methods. After he grows up, he suffered dysuria and urinary tract infection. He was diagnosed urethral stricture with urethral hairs when he was 18 year-old. Urethral dilatation and hair removal by grasper were done twice within one year. However the hair follicles can't be destroyed completely. We try to use laser epilation of hair follicles. Laser is easier to cauterize the hair follicle and very tiny hair. The advantage of laser epilation is easy to use the energy coming from the side firing. The initial result is encouraged but long-term follow up is still necessary.